

549 / 179 - 191  
182

186 marks

## CLAIMS:

1. A surface mode liquid crystal device comprising a layer of nematic liquid crystal having viscosity coefficients  $\eta_1$ ,  $\eta_2$  and  $\gamma_1$  such that  $(\eta_1 - \eta_2)/\gamma_1 \geq 1.15$  or  $(\eta_1 - \eta_2)/\gamma_1 \leq 0.9$ .

2. A surface mode liquid crystal device comprising a layer of nematic liquid crystal having viscosity coefficients  $\eta_1$ ,  $\eta_2$  and  $\gamma_1$  such that  $(\eta_1 - \eta_2)/\gamma_1 \geq 1.15$  or  $(\eta_1 - \eta_2)/\gamma_1 \leq 0.9$  (at a temperature such that the liquid crystal is at least 5°C away from a transition to another phase.)

3. A device as claimed in claim 2, in which the other phase is a smectic phase.

4. A device as <sup>claimed in claim 1</sup> ~~in any one of the preceding claims~~, in which the liquid crystal shows a nematic phase at at least one temperature in the range 0-60°C.

5. A device as <sup>claim 1</sup> ~~claimed in any one of the preceding claims~~, in which the nematic liquid crystal has an underlying smectic phase.

6. A device as <sup>claim 1</sup> ~~claimed in any one of claims 1 to 4~~, in which the liquid crystal layer comprises a polymer network formed by polymerisation of a polymerisable material with the layer cooled to a temperature at which the nematic liquid crystal has a smectic phase.

7. A device as <sup>claim 1</sup> ~~claimed in any one of the preceding claims~~, in which the liquid crystal has positive dielectric anisotropy and is disposed between first and second alignment layers providing substantially parallel alignment and a pretilt less than 45°.

8. A device as claimed in claim 7, in which the pretilt is less than 10°.

9. A device as <sup>claim 1</sup> ~~claimed in any one of the claims 1 to 6~~, in which the liquid crystal has negative dielectric anisotropy and is disposed between first and second alignment layers providing substantially parallel alignment and a pretilt greater than 45°.

Smectic

AAAA

AAAA

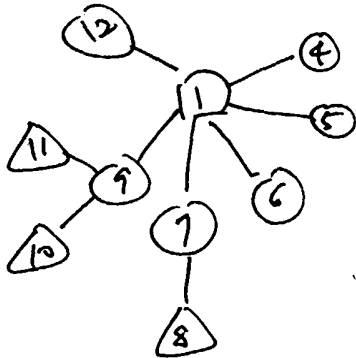
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10. A device as claimed in claim 9, in which the pretilt is greater than 80°.

11. A device as claimed in claim 9 ~~or 10~~, in which  $(\eta_1 - \eta_2)/\gamma_1 < 0$ .

12. A display comprising a device as claimed in <sup>claim 1</sup> ~~any one of the preceding claims~~.

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**APPENDIX - - Amendment Version With Markings to Show Changes Made**

Claims 4-7, 9, 11 and 12 have been amended as follows:

4. (Amended) A device as claimed in [any one of the preceding claims] claim 1, in which the liquid crystal shows a nematic phase at at least one temperature in the range 0-60°C.

5. (Amended) A device as claimed in [any one of the preceding claims] claim 1, in which the nematic liquid crystal has an underlying smectic phase.

6. (Amended) A device as claimed in [any one of] claim[s] 1 [to 4], in which the liquid crystal layer comprises a polymer network formed by polymerisation of a polymerisable material with the layer cooled to a temperature at which the nematic liquid crystal has a smectic phase.

7. (Amended) A device as claimed in [any one of the preceding claims] claim 1, in which the liquid crystal has positive dielectric anisotropy and is disposed between first and second alignment layers providing substantially parallel alignment and a pretilt less than 45°.

9. (Amended) A device as claimed in [any one of the claims 1 to 6] claim 1, in which the liquid crystal has negative dielectric anisotropy and is disposed between first and second alignment layers providing substantially parallel alignment and a pretilt greater than 45°.

11. (Amended) A device as claimed in claim 9 [or 10], in which  $(\eta_1 - \eta_2)/\gamma_1 < 0$ .

12. (Amended) A display comprising a device as claimed in [any one of the preceding claims] claim 1.